

**FEASIBILITY STUDY**

**NC 8  
from NC 65 (near Germantown)  
to the Virginia State Line  
Stokes County**

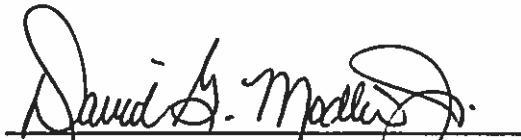
**Division 9**

**R-3801**

Prepared by the  
Program Development Branch  
Division of Highways  
N. C. Department of Transportation



David W. Conner, Sr., P.E.  
Highway Planning Engineer



David G. Modlin, Jr., Ph.D., P.E.  
Head of Feasibility Studies

2/26/98

Date



## **R-3801**

### **NC 8**

**From NC 65 (near Germantown)  
to the Virginia State Line  
Stokes County**

### **Division 9**

#### **I. General Description**

This preliminary study describes recommended improvements to NC 8 in Stokes County. It is recommended that NC 8 be improved from NC 65 (near Germantown) to SR 1652, on the south side of Danbury and from SR 1668, on the north side of Danbury to the Virginia State Line. Between termini, the project covers a distance of approximately 25 miles (40 km). For a location map, see Figures 1 and 2 .

That segment of NC 8 from SR 1652 to SR 1668 is the main thoroughway of Danbury. There is a 35 mile per hour speed limit through this area, it is heavily developed on both sides of the roadway, and it is a part of the Danbury Historic District. No improvements are recommended to this section of roadway as a part of this project.

Two alternates were evaluated for the proposed improvements. The alternates are as described below:

#### **Alternate 1**

Alternate 1 includes utilizing the existing roadway alignment and improving the existing 2-lane cross section to 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide shoulders, 4 feet (1.2-m) paved.

Implementation of Alternate 1 should be on an 80-foot (24.4-m) wide right-of-way. It is estimated that acquisition of an 80-foot (24.4-m) wide right-of-way would result in the relocation of 14 residences and 8 businesses.

The total cost for right-of-way and construction, for Alternate 1, is estimated to be \$38,500,000 as follows:

Right-of-Way	\$ 5,300,000
Construction	33,200,000
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Total Cost	\$38,500,000

#### **Alternate 2**

From NC 65 to the Dan River , Alternate 2 includes realignment of those sections of roadway with curve radii smaller than that required for a 60 mile per hour (96.8 km/hr)

design speed and includes upgrading the remaining existing roadway to current 2-lane roadway standards.

From the Dan River to the Virginia State Line, Alternate 2 includes reducing the grade of those sections of roadway with vertical sight distance problems and includes upgrading the remaining existing roadway to current 2-lane roadway standards.

The recommended finished cross section for Alternate 2 is 2-lane rural shoulder with 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide shoulders, 4 feet (1.2-m) paved.

Implementation of Alternate 2 should be on an 80-foot (24.4-m) wide right-of-way. It is estimated that acquisition of an 80-foot (24.4-m) wide right-of-way would result in the relocation of 29 residences and 11 businesses.

The total cost for right-of-way and construction, for Alternate 2, is estimated to be \$57,300,000 as follows:

Right-of-Way	\$ 8,800,000
Construction	48,500,000
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Total Cost	\$57,300,000

Alternate 2 is recommended for implementation. Although Alternate 2 is more expensive and would create considerably more relocations than Alternate 1, Alternate 2 would create the ~~only~~ continuous north-south route through Stokes County meeting current 2-lane standards and the improvements should significantly improve the accident history and safety characteristics of the roadway.

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

## **II. Need For Project**

The purpose of this project is to provide a continuous north-south route through Stokes County meeting current 2-lane standards and to improve the accident history and safety characteristics of the roadway. The project was requested by the Stokes County Board of Commissioners.

On the North Carolina Statewide Functional Classification System, NC 8 is designated as a major collector between NC 65 and the south NC 89 intersection and as a minor arterial from that point to the Virginia State Line.

The project route is very rural with light density residential and commercial development along the majority of the roadway. There are concentrations of development in the Meadows Community, in the Town of Danbury, and in the Lawsonville Community. At the south NC 89 intersection, there is a Department of Transportation maintenance facility and a Department of Prisons detention facility located on the northeast side of the roadway. The majority of NC 8 through Danbury is located in the Danbury Historic District. Immediately north of Danbury, there is a

county government complex located on the east side of the roadway. At approximately 1.8 miles (2.9 km) north of Danbury, the Stokes-Reynolds Hospital complex is located on the east side of the roadway and at this location, NC 8 intersects SR 1001, which is the main entrance to Hanging Rock State Park. Also, development along the project route includes a minimum of 6 churches, 4 cemeteries, 2 fire departments, and the Lawsonville Elementary School.

From SR 1652, south of Danbury, to SR 1001, NC 8 is a part of the "North Line Trace" bicycle route.

From NC 65 to the south NC 89 intersection, the terrain is heavily rolling. From the south NC 89 intersection to just south of the Lawsonville Community, the terrain is mountainous and from the Lawsonville Community to the Virginia State Line, the terrain is gently rolling. From the Dan River to the Lawsonville Community the roadway includes numerous sharp curves; however, the terrain is such that horizontal realignment is impractical.

Within the project termini, existing NC 8 is a 2-lane roadway with pavement widths varying from 18 feet (5.5 m) to 24 feet (7.3 m). There is generally no paved shoulder and existing soil shoulders vary in width from 1 (0.3-m) to 6 feet (1.8 m).

There are 6 structures located along the project route. The structures are as follows:

Bridge # 14

Bridge # 14, over Town Creek, is located approximately 0.2 miles (0.3 km) north of NC 65. It has a clear deck width of 24 feet (7.3 m) and is 206 feet (62.8 m) long. It was constructed in 1950 and has a sufficiency rating of 43.4 out of a possible 100 points.

Bridge # 44

Bridge # 44, over the Town Creek overflow, is located approximately 0.3 miles (0.5 km) north of NC 65. It has a clear deck width of 24 feet (7.3 m) and is 90 feet (27.4 m) long. It was constructed in 1950 and has a sufficiency rating of 34.1.

Bridge # 50

Bridge # 50, over Flat Shoals Creek, is located approximately 0.9 miles (1.4 km) south of SR 2018. Construction has recently been completed on the replacement (B-2632) of the bridge. The bridge was replaced, at the same location, with a reinforced concrete, double barrel, box culvert.

Bridge # 55

Bridge # 55, over Mill Creek, is located immediately south of SR 1652. Construction of a new reinforced concrete, double barrel, box culvert (B-2633) is currently underway adjacent to the bridge. The new culvert will replace Bridge # 55.

Bridge # 60

Bridge # 60, over the Dan River, is located at the north intersection of NC 8 and NC 89. The bridge has a clear deck width of 20 feet (6.1 m) and is 315 feet (96.0 m) long. It was constructed in 1932 and has a sufficiency rating of 52.6.

Structure # 64

Structure # 64, at Buck Island Creek, is a 36.5-foot (11.1-m) by 18.5-foot (5.6-m), reinforced concrete, single barrel, box culvert. The culvert is approximately 77 feet

(23.5 m) along its centerline. The culvert was constructed in 1932 and has a sufficiency rating of 88.9.

During the period from February 1, 1994, through January 31, 1997, there were 195 accidents reported within the project termini. This resulted in an accident rate of 257.2 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 219.5 Acc/100 MVM for all rural NC routes during 1996. There were two fatalities reported during the period and 87 of the accidents resulted in non-fatal injuries. Sixty of the accidents were ran-off-the-road, overturn, or head-on accidents which occurred in areas of curvy roadway alignment.

Within the project termini, the estimated 1997 Average Daily Traffic (ADT) volumes range from a high of approximately 6,500 vehicles per day (vpd), near NC 65, to a low of approximately 1,600 vpd, near NC 704. The design year (2025) estimates range from 11,500 vpd to 3,800 vpd respectively. Current and future truck volumes are estimated to total about 6% of the traffic volumes.

It is estimated that most of NC 8 is currently operating at a high Level Of Service (LOS) C with a short segment near NC 65 operating at a Level D. Without the proposed improvements, it is estimated that the Levels of Service will deteriorate to Levels D and E by the design year (2020). If the roadway is improved as recommended, it is estimated that the current Levels of Service will prevail until close to the design year.

### **III. Recommendations**

It is recommended that NC 8 be improved from NC 65 (near Germantown) to SR 1652, on the south side of Danbury and from SR 1668, on the north side of Danbury to the Virginia State Line. Between termini, the project covers a distance of approximately 25 miles (40 km). For a location map, see Figures 1 and 2.

That segment of NC 8 from SR 1652 to SR 1668 is the main throughway of Danbury. There is a 35 mile per hour speed limit through this area, it is heavily developed on both sides of the roadway, and it is a part of the Danbury Historic District. No improvements are recommended to this section of roadway as a part of this project.

A detailed description of the recommended improvements is:

1. From NC 65 to the Dan River, realign those sections of roadway with curve radii smaller than that required for a 60 mile per hour (96.8 km/hr) design speed and upgrade the remaining existing roadway to current 2-lane roadway standards. The recommended finished cross section is 2-lane rural shoulder with 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide shoulders, 4 feet (1.2-m) paved.
2. From the Dan River to the Virginia State Line, reduce the grade of those sections of roadway with vertical sight distance problems and upgrade the remaining existing roadway to current 2-lane roadway standards. The recommended finished cross section is 2-lane rural shoulder with 12-foot (3.6-m) wide travel lanes and 8-foot (2.4-m) wide shoulders, 4 feet (1.2-m) paved.

3. Replace Bridges #14 and #44 over Town Creek, and Bridge # 60 over the Dan River. The new bridges should have a clear deck width of 40 feet (12.2 m).
4. Extend the length of Culverts # 50, # 55, and # 64, as necessary to accommodate the widened roadway.
5. Install approximately 15,000 feet (4,572 m) of steel beam guard rail.

It is recommended that the project be constructed on an 80-foot (24.4-m) wide right-of-way. It is estimated that acquisition of an 80-foot (24.4-m) wide right-of-way would result in the relocation of 29 residences and 11 businesses.

The total cost for right-of-way and construction is estimated to be \$57,300,000 as follows:

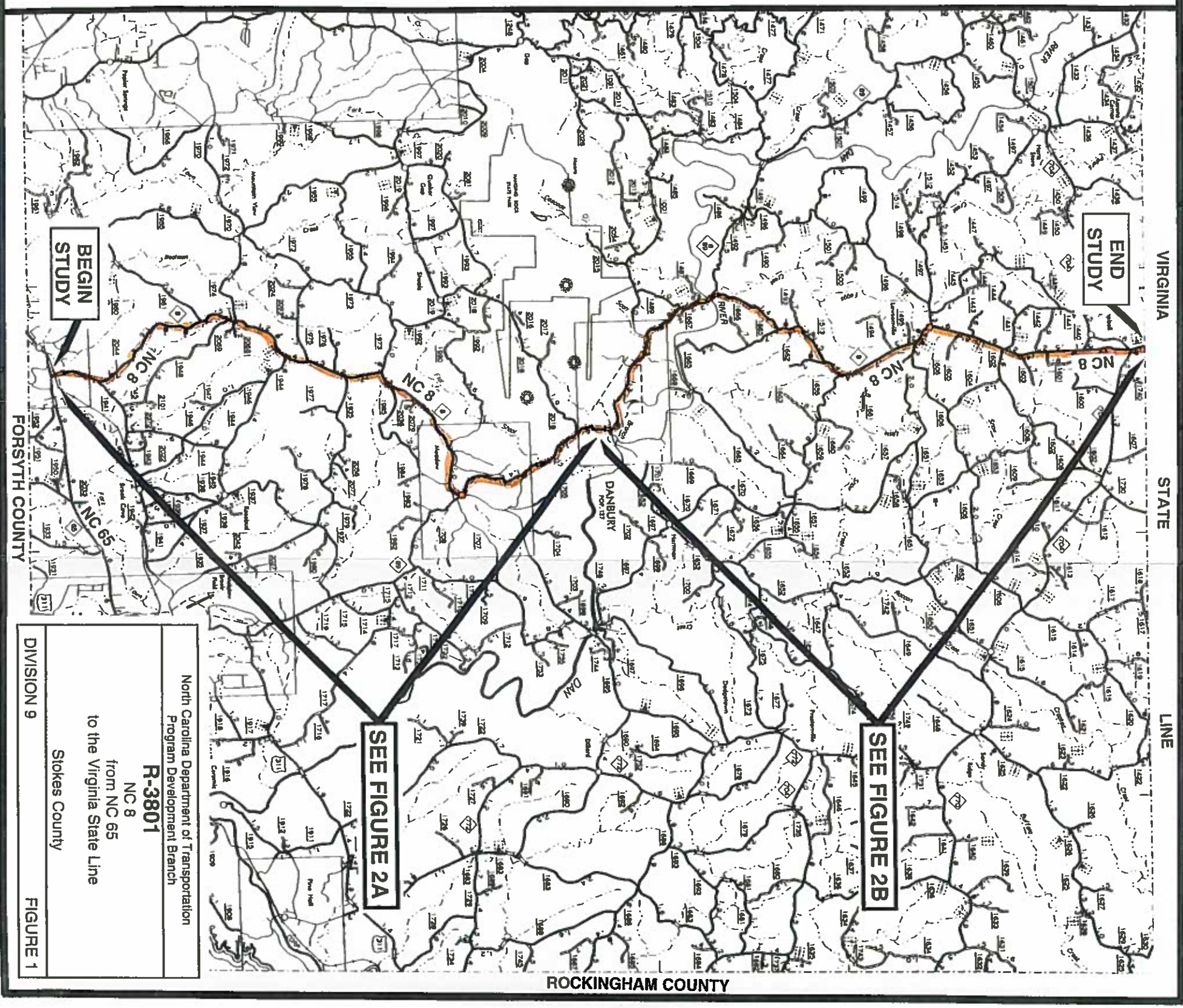
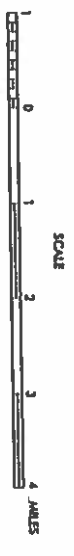
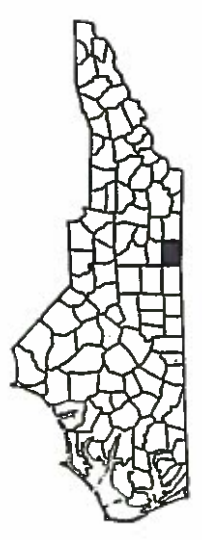
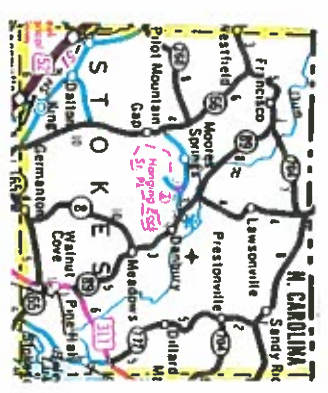
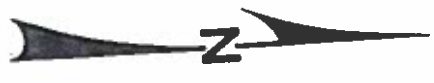
Right-of-Way	\$ 8,800,000
Construction	48,500,000
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Total Cost	\$57,300,000

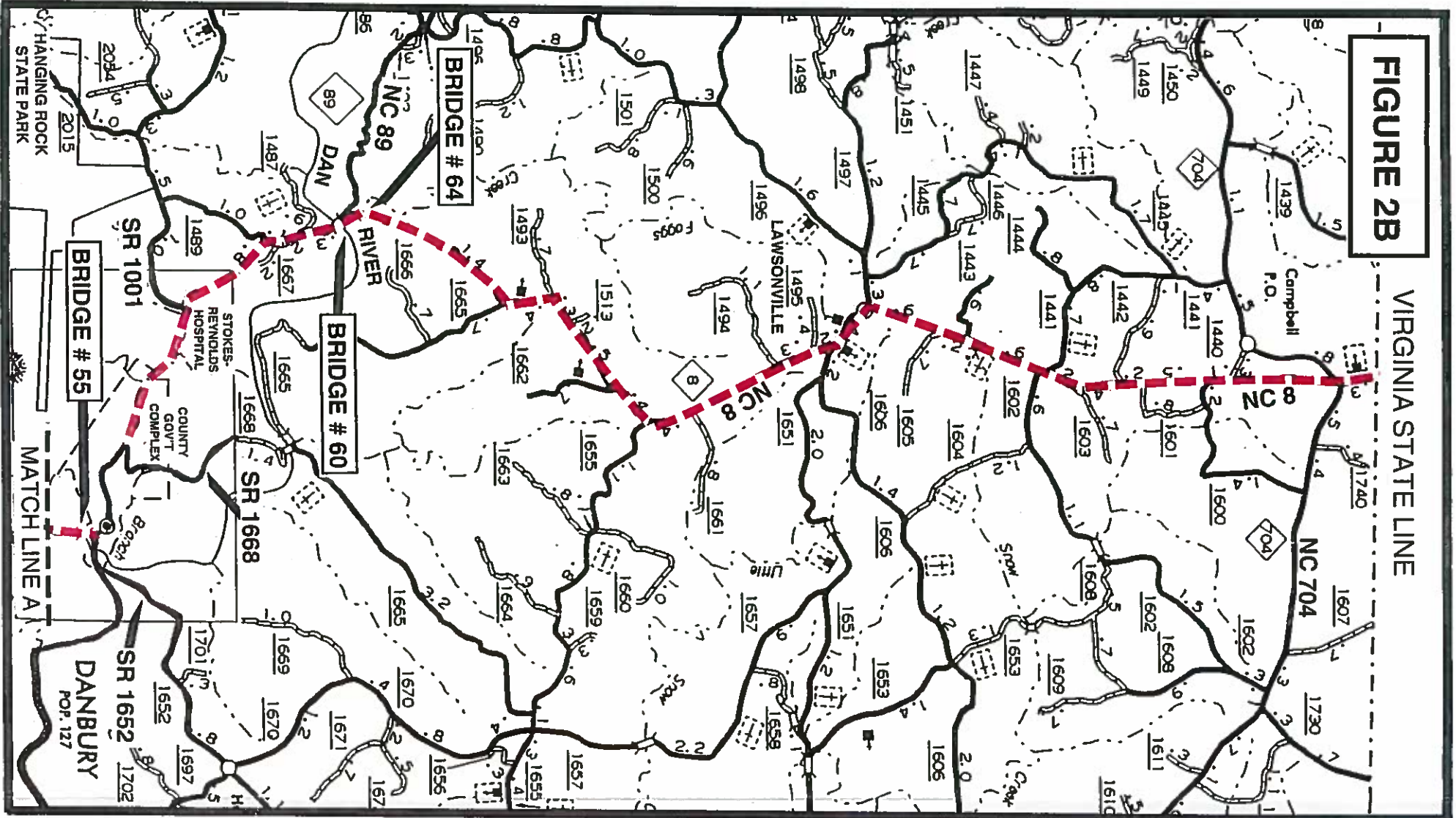
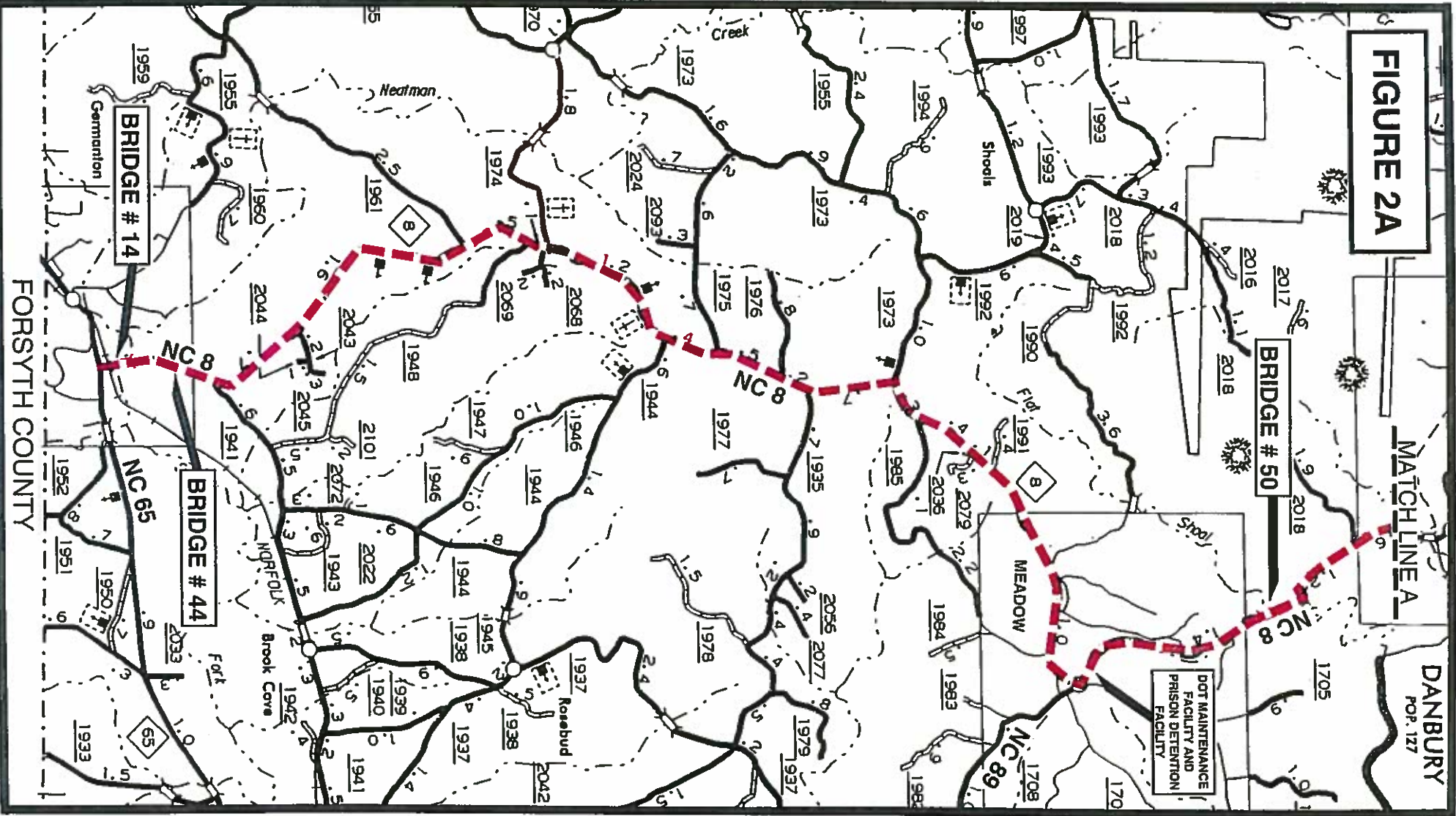
#### IV. Other Comments

An environmental screening was not conducted for this study; however, due to the construction potential in the areas of Town Fork Creek, Flat Shoals Creek, Mill Creek, and the Dan River, Corps of Engineers permits and wetlands mitigation will be required. The costs for wetlands mitigation is not included as part of the above estimated project costs.

A section of this project is a part of the "North Line Trace" bicycle route. The recommended 4-foot (1.2-m) wide paved shoulders should be adequate to accomodate bicycle useage.







North Carolina Department of Transportation	
Program Development Branch	
<b>R-3801</b>	
NC 8	
from NC 65	
to the Virginia State Line	
Stokes County	
DIVISION 9	FIGURE 2